

CHAPTER 14

SLUDGE REMOVAL PROCEDURES

14-1. General. This chapter describes the removal procedure for any remaining sludge in the underground storage tank (UST). This chapter recommends but does not necessarily dictate the proper procedure for sludge removal in any given situation. Typically, the contractor is responsible for assessing specific situations for the most appropriate response.

14-2. Operations, Procedures, and Instructions.

a. Contractors, subcontractors, and employees responsible for sludge removal should be familiar with:

- (1) Confined space entry (confined space should be avoided if at all possible).
- (2) All safety rules and regulations (consult SSHP for specific instruction/requirements).
- (3) Use of equipment and procedures for removing tanks.
- (4) Handling and disposal of the sludge likely to be encountered.
- (5) API Publications: 2003, 2015, 2217, and 2219.

b. Documentation.

- (1) Use field logbook to record all activities performed, personnel contacted, dates and times when these activities were performed, field conditions, and any unusual circumstances.
- (2) Keep information factual and objective.
- (3) Enter information not recorded in the logbook on field forms. In either case, record the following information:
 - Site identification
 - Date and time specific activities took place
 - Personnel names
 - Field observations

Photographs are suggested. If photos are taken, record name of photographer, site name, camera type and lens size, and general direction for enclosure in the Tank Closure Report.

c. Procedures. Minimize activities requiring personnel entry into tanks. However, when such entry is necessary, follow safety and

health precautions for tank entry as outlined in Chapter 7 and Appendix E, Confined Space Entry, including the additional precautions necessary for tanks that have stored leaded gasoline.

- (1) Remove sludge by various methods or by a combination of methods, depending on the construction of the tank and the number and size of shell openings. These methods are summarized in Table 14-1 and are discussed below. If at all possible, use procedures that do not require tank entry.
 - (a) The preferred method of sludge removal is to remove the end walls of the tank. Remove the sludge by flushing it from the tank with a high-pressure, low-volume water stream, collect, and containerize it. This method eliminates problems with confined space entry, explosive atmospheres, and allows easier cleaning of the tank. Any method of removing residual material that minimizes the time that workers must spend inside the tank contributes to the safety of the operation.
 - (b) The tank may be swept and washed down with a water-hose stream.
 - (c) The sludge may be washed or swept into piles and removed from the tank with buckets or wheelbarrows.
 - (d) If necessary, any remaining liquids may be removed from the tank with an absorbent, such as sawdust or spent clay, and may be disposed of as a solid waste.
 - (e) Vacuum tank trucks provide a fast and efficient method for removing and hauling sludge from tanks. Follow these guidelines when using vacuum trucks:
 - Be sure the area in which the vacuum tank truck operates is vapor-free.
 - Locate the truck upwind from the tank and outside the path of probable vapor travel.
 - Consider vapor travel and sources of ignition where sludge will be discharged from the vacuum truck

For specifics of vacuum truck safety precautions and operation, refer to Chapter 12.

14-3. Waste Disposal and Recycling. Sludges that cannot be vacuumed should be transferred to a lined, 55-gallon drum or another suitable container. Small quantities of water may be added to the tank to facilitate removal.

TABLE 14-1 PROCEDURES FOR SLUDGE REMOVAL		
Procedure	Advantage	Disadvantage
Flushing with high air pressure.	Minimizes confined space activities. Not labor intensive.	Requires an outlet at the bottom of the tank, or self-priming pumps, or steam- or water-operated eductor. Increases potential for static charge buildup in the nozzle, which could trigger an explosion.
Flushing with water.	Same as above. No special equipment is required.	Same as above, with the potential for creation of even larger waste quantities.
Mechanically sweeping or scraping into piles and removing with buckets.	Minimizes waste quantity. No special equipment is required.	Labor-intensive in a confined space environment.
Application of an absorbent such as sawdust or spent clay.	Can be disposed as a solid waste.	Effective for small quantities or residuals. Increases waste quantity. Material still has to be mechanically removed.
Vacuum truck.	Minimizes waste quantity. Minimizes confined space activities. Not labor-intensive.	Area of truck operation must be vapor-free.

Test tank sludge for hazardous characteristics outlined in 40 CFR 261 Subpart C. The test results determine the requirements for the final disposal. At some installations, disposal services may be available through the local Defense Reutilization and Marketing Office (DRMO). This typically involves completion of a turn-in document for each container of hazardous waste as well as coordination either directly with the DRMO Contracting Officer Representative or coordination via the installation environmental office. Suggested disposal methods include cement kilns, incineration, solidification, landfill disposal, or shipment to a temporary storage and disposal facility.

Options for recycling of petroleum tank sludges are similar to those discussed in Section 12-4.

14-4. Reporting and Documentation Requirements-Hazardous Waste.

- a. Notification and Application. All facilities that generate, store, transport, treat, or dispose of hazardous wastes must file a form notifying the EPA. Unless notification has been given to EPA, waste may not be stored, transported, treated, or disposed. All facilities that store, treat, or dispose of sludge must apply for an EPA permit.
- b. Development of a Plan. Each facility that generates sludge must develop a plan for the storage, treatment, and disposal of its sludge. If storage, treatment, or disposal is to occur onsite, the facility is then considered to be the operator of a hazardous-waste-management facility and must obtain a permit to operate such a facility. A plan must, therefore, be developed to operate the facility. If the facility decides to dispose of the sludge offsite, no permit is required as long as the facility stores the material in appropriate containers and ships it offsite within 90 days of generation; however, 40 CFR 262.34 specifies storage requirements before shipment.
- c. Shipping Hazardous Waste. Before shipping RCRA hazardous waste to an offsite facility, the facility that generated the waste is required to prepare and sign a manifest that identifies the facility, identifies the waste by its EPA and DOT hazardous waste number and name, identifies the offsite facility that will handle the material, and specifies the total quantity in the shipment. The facility should be certain that the transporter and the selected facility have EPA identification numbers and permits to engage in hazardous-waste-management activities.
- d. Documentation. The regulations impose extensive recordkeeping and reporting requirements. Facilities that generate sludge must maintain copies of all manifest documents and records and must also

- submit annual reports. Additional reporting requirements are detailed in 40 CFR 262, Subpart D and 40 CFR 268.7.
- e. Requirements for Transporters. Persons engaged in the offsite transportation of the sludge must comply with EPA's specific regulations for the transportation of hazardous wastes, which govern notification, manifest, and recordkeeping. Persons transporting the sludge must also comply with the DOT regulations set forth in 49 CFR.
 - f. State Programs. RCRA authorizes the states to conduct their own hazardous-waste programs in lieu of the federal RCRA program. Any state whose program has been approved by EPA may itself carry out the functions delegated to EPA under the act and may specify additional and more rigorous requirements. Consequently, facilities that generate sludge and who plan to dispose of sludge should have their plans reviewed by their state's environmental agency to ensure compliance.
 - g. Specific Facility Standards. Specific requirements governing storage, treatment, and disposal of hazardous wastes are updated continually by EPA, and operators should consult the most up-to-date publications for details about items such as security, monitoring, contingency plans, and emergency procedures.

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